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FOURTEENTH YEAR!
MECHANICS, INVENTORS, MILL-WRIGHTS,
FARMERS AND MANUFACTURERS.

The volume and widely circulated journal devoted to FOURTEENTH YEAR on the 23d of September.

It is an Illustrated Periodical, devoted to the publication of information relating to the various MECHANICAL ARTS, INVENTIONS, FARMING, MILL-WRIGHTS, and MANUFACTURES, and is published weekly, with the exception of the last number, which is published semi-monthly.

The SCIENTIFIC AMERICAN is printed upon a new, improved paper, and is published weekly, with the exception of the last number, which is published semi-monthly. It is published by M. L. BROWN, at No. 107 Nassau Street, New York.

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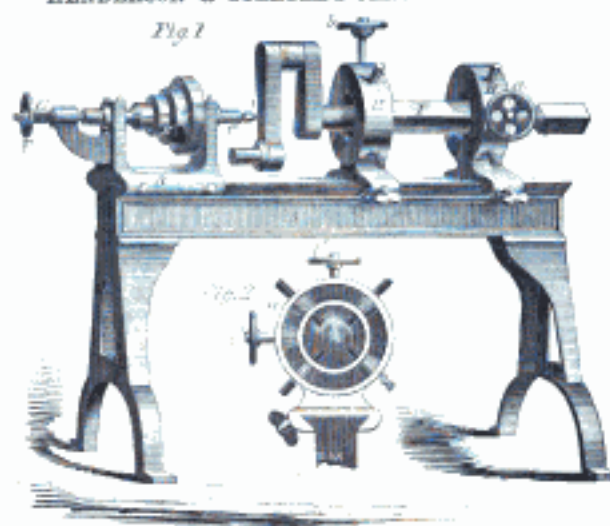
Improved Centering Lathe.

The lathe which is the subject of our illustration is so constructed as to have constant in line with the geometrical center of any desired part of both regular and irregular objects. It often occurs that the object to be centered is of such form that some of its sections are concentric to others, and it is impossible that the centers be based not concentric with the end, but concentric to it, and concentric with some particular part which may be on the saddle or more or less distant from the end. An object having some of these peculiarities is seen at 1, Fig. 1. The object shown explained, which has been hitherto accomplished by much manual labor, these inventors—G. Henderson and J. Steele, of Alleghany City, Pa.—effect by the machine shown in perspective in Fig. 1.

The article to be centered is supported in the lathe by the part with which the centers are to be based, in one of the concentric cheeks, which are combined with a lathe and boring tool in line with the centers of the cheeks.

A is the frame of the lathe, having a head, B, in which a spindle, C, revolves, holding a boring tool, D, by means of cone pulley, E,

HENDERSON & STEELE'S CENTERING LATHE.



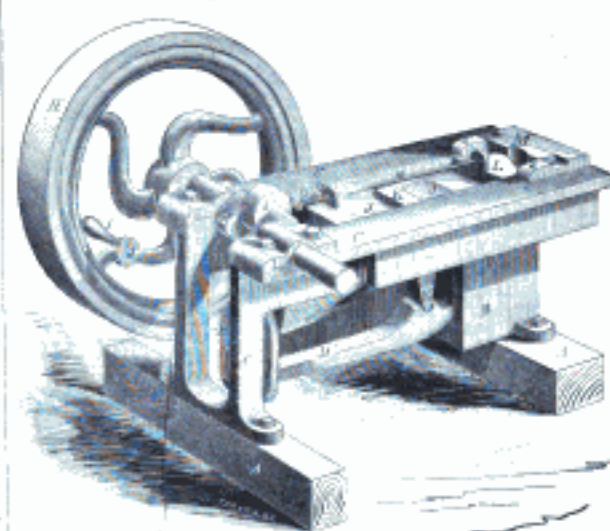
The tool, spindle and pulley are moved back and forth by the screw, G, and hand-wheel, F. If H are two concentric cheeks made to slide along the bed of the lathe, to which they can be secured in any position by screws, J, K and L are fixed wheels to secure the object in the chuck after it has been adjusted by the screws seen in Fig. 2, which is a front view of a chuck.

The operation is simple, the piece, I, being

secured in the chuck, H, in the desired position; the boring tool is brought in contact with it, bore a center coincident with the geometrical center of the cheeks, without reference to the shape, size, or position of the object.

This lathe was patented by the inventors July 4, 1858, and by addressing them as above, any information or machines can be obtained.

BLAKE'S STONE BREAKER.



The great necessity which exists for a good and efficient stone-breaker is appreciated by all engineers, millwrights, and lime burners, and at last the want is being supplied by Eli W. Blake, of New Haven, Conn. The quality necessary in a good and efficient machine are that it should be strong, durable, and compact, and that it should exercise a great force through a small space. The stone-

breaker which is the subject of our illustration fulfills all these conditions, and not only breaks the stone or other hard substances, but delivers them nearly all of equal size, which can be easily regulated by the attendant or operator placing in breaking blocks of proper size.

Our illustration is a perspective view of one of these machines resting on two wooden

blocks, A, the rest of the machine being cast iron. B and C are supports of the frame, D, holding also the box or space in which the crushing jaw works. D is a frame, one end of which rests upon B, and the other is held in a link, E, which works at F on to a crank, G, rotated by a fly wheel, H, and handle, I, or other means. In a semi-circular groove in D, the piece, K, fits, and two pieces, J, are each side of K. These pieces have rounded ends, and they fit or move in semi-circular grooves in the back of the frame, G, and the breaking jaw, L. This jaw is of chilled iron, as are the block, M, and slide blocks, N. From the jaw, I, a rod, A, extends back, and a spring, P, has always a tendency to draw it back toward the back, A. The jaws are raised each other at the bottom than at the top, so that as the stones are dropped between the jaws they will first be broken a little, and they fall down between the jaws by their own gravity, they will be broken more, and they are sufficiently small to pass out as a screen beneath, or on to a single heap.

The operation is simple and perfect. The rotation of the wheel elevates the link, and with it the lever, D, and piece, K, which presses J out, and so pushes L toward M, the force exerted breaking the stones between the curved surfaces of the jaws. There has been one of these stone-breakers at the Central Park in this city some time, where it has given the greatest satisfaction.

It was patented June 15, 1858, and any further information may be had by addressing the inventor as above.

Effect of Heat upon Alumen.

Professor Johnson, in his "Chemistry of Common Life," says that a well cooked piece of meat should be full of its own juices, or natural gravy. In roasting, therefore, it should be exposed to a quick fire, that the external surface may be made to contract of color, and the albumen to coagulate, so that the juices have had time to escape from within. The same observation is applicable to boiling; when a piece of beef or mutton is plunged into boiling water the outer part contracts, the albumen which is near the surface coagulates, and the internal juices are prevented either from escaping into the water by which it is surrounded, or from being diluted or weakened by the absorption of water among it. When cut up, therefore, the meat yields much gravy, and is rich in flavor. Hence a broiled or roasted chop is done quickly, and over a quick fire, that the external juices may be retained. On the other hand, if the meat be done over a slow fire its pores remain open, the juices continue to flow from within as it has dried from the surface, and the flesh pine and becomes dry, hard, and unwholesome. On it is put in cold and tepid water, which is afterwards brought to a boil, much of the albumen is extracted before it coagulates, the natural juices for the most part flow out, and the meat served is in a nearly tasteless state. Hence to prepare good boiled meat it should at once be put into water, slowly brought to a boil. But to make beef tea, mutton broth, and other meat soups, the flesh should be put into cold water, and this afterwards very slowly warmed, and finally boiled. The advantage derived from steaming—a term not infrequent in cookery books—depends very much upon the effects of slow boiling, as above explained.

AN ELEPHANTINE PASSENGER.—Amongst the passengers at the Lyons (France) railway terminus, a short time since, was an elephant, loaded from Atychia to Paris.

New Inventions.

Important Improvement in Steam Boilers.

The amount of fuel which is but half consumed, and remains as coal substance in the fire-box of a boiler, or escapes as smoke and carbonic acid instead of carbonic acid through the chimney, must, when we consider the number of boilers used for stationary, locomotive and marine engines, be immense. To save fuel has been the attempt of every person who has endeavored to improve the steam engine during the last few years, but the majority of inventions have had relation to attaining greater mechanical perfection in the engine, and although these inventions may do much, yet the chief waste of heat is not in the engine, but in the steam generating apparatus, to which part Mr. F. B. Blanchard has directed his attention. It has been laid down as a principle by one of the most eminent writers on the steam boiler and furnace, that an artificial draft produced more perfect combustion than a natural one, and the excessive heat of the blast furnace, which, capacity for capacity, burns but little more than the reverberatory, whose heat is much lower, may be utilized as an illustration of the fact, and the invention which is the subject of our illustrations takes the fullest advantage of this principle.

Fig. 1 is a top view of the boiler and superheater; Fig. 2 is a vertical longitudinal section of the same; Fig. 3 is a front view of the boiler, and Fig. 4 is a cross section of the boiler.

A is the fire-box and B the boiler; C is the front plate of the boiler in which are fire and ash doors, D, that close air tight, so that no air can go through them to supply the furnace, and they are only opened to start the fire or rake the bars, K, which are arranged as seen in Fig. 4. The coal is fed from the dock by means of a feeder, F, which is a tube or spout provided with two valves, a and d. The two arms, e, connected at the top, have between them a roller, h, which, pressing upon a, keeps it tight down, and this being thrown back, a is opened, and coals placed in, as to fill the space between a and d; a is then closed, and the frame and roller, e, h, pass over it and d is opened, the coal falling on the distributor, a, which is shaken by the axle, f, passing through stuffing boxes outside the boiler, and so the fuel is projected evenly over the fire. The air is supplied underneath the fire bars by a pipe, H, from an air-pump worked by the engine, and keeping the fire-box full of air at about 1 to 1½ pounds pressure. The tube, G, communicates with H, and by the regulator or the cock, g, a given quantity of air can be supplied above the fire. The products of combustion pass through the tubes, I, into the smoke box, J, and when the fire is lighted the valves, A' and A'', are opened by the lever, J, and rod, k, to produce a direct draft up the chimney, O; when the fire is going the doors are closed, the air sent through from the air-pump, the valves, A' and A'', closed, and the products of combustion pass through the return flues, K, into the box, L, which is covered with water, and from L through two flues, M, into the superheaters.

The steam when generated passes from the chamber, N, through the pipe, P, into the superheater, Q, and after it has received an additional quantity of heat from the products of combustion, it is conveyed through R to a high pressure engine. From this it comes back through the pipe, P', into the superheater, Q', and after receiving a quantity more heat to compensate for the loss sustained in the high pressure engine, and passes through pipe, P'', to the low-pressure beam engine.

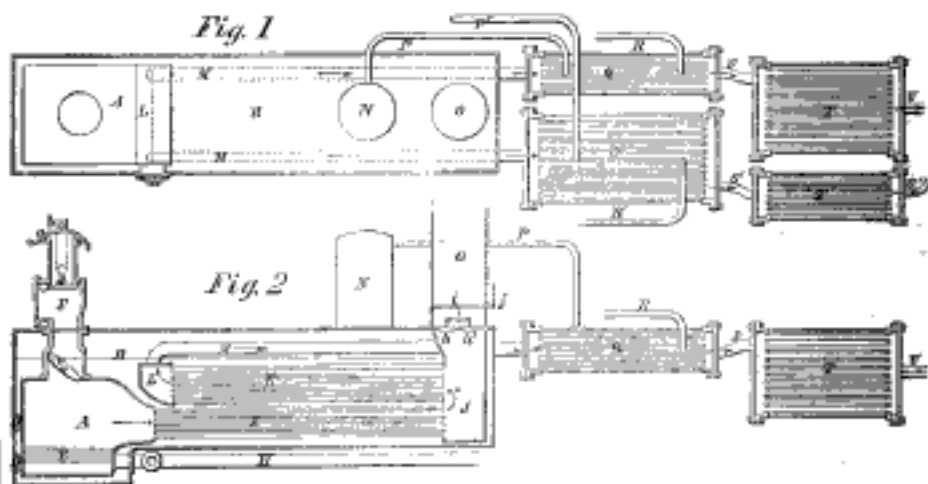
The products of combustion, after having heated the steam, are not yet to be thrown away, but are made to pass through tubes, S S', into heater, T T', where the feed water and feed air are heated to a proper tempera-

ture, and they finally pass out by tubes, U U', into a small smoke pipe not over six inches in diameter, from which there issues, not smoke and carbonic acid, or flame, but nearly pure carbonic acid, at a temperature but somewhat that of the atmosphere a few degrees, showing the perfection of the combustion in the furnace, and great economy in the application of the heat.

Perhaps the best method of illustrating the many advantages of this arrangement will be to state some data made from hourly observations by ourselves on board the *John Force*, on a trip from this city to Albany on Aug. 31, and all our mechanical readers will from them be able to judge for themselves of its great merits. The boat is not built for speed, and is 145 feet long, 24 feet beam, and draws

about four feet of water. The cylinder of the engine is 36 inches in diameter and has 8 feet stroke; it is not particularly well framed, and was not built specially for Mr. Blanchard's improvements. With the fuel and water which we made to hand, the distance was about 160 miles, which we accomplished in twelve hours. The amount of coal used was 6,974 pounds or 467 pounds per hour, running time,

BLANCHARD'S IMPROVEMENT IN STEAM BOILERS.



from which must be deducted 446 pounds of coal and wood for kindling and 993 pounds of coal to start the fire, and 993 pounds of coal and water were taken from the furnace at the end of the trip.

The average pressure in the boiler was 64.7 pounds, and in the cylinder it varied at the different positions of the stroke from 30.8

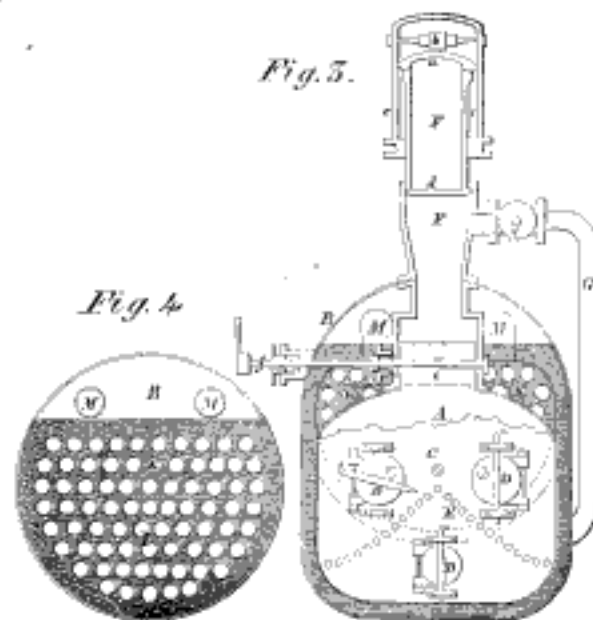
pounds to 38.0 pounds, having a temperature of 340°. The great point, however, was that the coal was weighed, and the water measured, and 12½ pounds of water were evaporated for every pound of coal, and the steam was heated 80° above the initial temperature. Calculating the horse power of the engine in the usual way, from the number of strokes

four inches square was placed across the machine used for proving chain cables, and a piece of chain was attached to a ring fixed in the center of it. A wooden block laid on the oak blocks under a force of 2,900 pounds, the test with that of 2,900 pounds, and the Henschel mahogany of 1,400. The oak and block appeared as if crushed, but without a complete disintegration of the fibers; the mahogany showed long splinters, indicating a much longer grain or fiber than the others. Mr. Arman considers this result as a conclusive proof that mahogany is superior for many kinds of ship-building purposes, and although it is less flexible than good French oak, its permanent resistance under a direct strain is more considerable. MM. Le Min & Son, builders at Rouen, also confirm the opinion of Mr. Arman, by giving an account of the results obtained in the use of mahogany in a vessel which they had built, the *Adèle*, just returned from a long voyage. The captain, in a letter to the builders, gives a most satisfactory account of the state of the vessel, and expresses his decided opinion that the use of oak in ship-building may be advantageously replaced by mahogany.

ALUMINUM.—A new alloy under the name of "brass aluminée" has been produced by M. Delahaye, of Valenciennes. It consists of one-fourth aluminum and nine-tenths copper; has the appearance of pure gold, is remarkably easy to cast and chisel, and is much less subject to oxidation, discoloration, &c., than ordinary brasses or brass castings. It is suggested that this bronze, which is very hard, might be advantageously used for the bearings of machinery.—*Reynolds*.

We think that the inventor is not M. Delahaye, but Dr. Percy, the English metallurgist, who exhibited this same material, or one having a similar composition, nearly three years ago at the Royal Institution, London.

REWARD TO WHOLE FURRING CLUBS.—Any person who will get up a club of ten or twelve subscribers at our clubbing rates, can add his own name to the list, and we will send him the *Scientific American* free so long as the club is kept up. Will our friends be induced to go to work and get up clubs on these terms? Do all you can for us this year.



per minute, the area of the piston and pressure of the steam, and then deducting one-tenth for friction, we find that it is about 300 horse power, which gives the extraordinary result, that by Mr. F. B. Blanchard's arrangement only 3.7 pounds of coal per horse power per hour were used on that trip.

The inventor obtained a patent in this country July 30, 1885, and two in England and France, and he is about applying for some others here. Any further information can be

obtained by addressing F. B. Blanchard, box 2,454 Post Office, New York.

Timber for Ship-building.

The increasing scarcity of good oak timber for ship-building, says the *London Engineer*, induced M. Arman, the well-known ship-builder at Bordeaux, to make some experiments last year to ascertain the strength of mahogany as compared with French oak and teak. A piece of each kind of wood about

Scientific American.

NEW YORK, SEPTEMBER 6, 1888.

Tale-tellers.

"All's well that ends well."

We close the Thirteenth Volume of the *SCIENTIFIC AMERICAN* with this number. The curtain drops upon a year remarkable for some of its events; and as we glance cursorily over its history, and connect the several years of our varied and interesting experience, the incidents, the toils, the pleasures, and the pains so mix themselves together and so crowd upon us, that we scarcely know where or how to begin our retrospect.

The progress of science during the last thirteen years has been marked by startling strides, and each great discovery or invention seems more like the dream of some visionary than one of the wonderful and tangible realities which almost daily spring into existence, to mark the mighty triumphs of mind over matter. Could some skillful painter depict upon his glowing canvases the myriad inventions that have occurred in the affairs of our own country since the close of the Revolution which introduced as into the great family of nations, and by an artistic array of scenes, actual and ideal, display the principal agencies that have combined to produce our present national greatness—how deeply would our minds become impressed by the contemplation! In the marvelous results that have been accomplished, it is true that money, and business talent, and experience have each played a conspicuous part; yet it cannot be denied that the inventive genius of the American people has been the secret and omnipresent master of that machinery of means which has opened to place them in their present elevated scale. Genius is the master-spirit of all progress—the brilliant planet in comparison with which all other agencies are but the satellites. Wherever the track of true social, moral, and intellectual progress is perceived, there also will be seen the early footsteps of the man of genius—the inventor. It needed the workings of such a mind to project the Steam Engine and render it subservient to the uses of industry and commerce. It required the magic power of inventive genius to produce the Electric Telegraph, by which the very lightning of heaven are transformed into the fiery-tongued messengers of men. It employed the mental skill and patient toil of scores of brains to devise the Flow, the Printing Press, the Reaper, the Loom, the Sewing Machine, and the thousand of other valuable contrivances which enter into the daily service of man, and contribute to his comforts, luxuries and actual necessities. Thus might we go on, almost interminably, to show that, in all questions of real material progress, in the world of science and art, the inventive genius of our people is the principal pillar of our country's greatness. What stronger proofs of this can be found than those which have been inscribed upon the pages of the *SCIENTIFIC AMERICAN* during the last thirteen years? How abundant is the testimony which they bear to the achievements of American inventors!

The end is not yet. "Progress" is the watchword. Although the much-sung channels of discovery may seem to have been exhausted of their treasures by the pioneers of progress, there yet remain innumerable fields of facts to be explored by men of genius; difficult problems remain to be solved, and vast results are yet to be elicited.

We shall enter on our Fourteenth Volume with the determination to make it not inferior to any of its predecessors. We shall think, and toil, and labor, day and night, to benefit the mechanics and inventors of our country, and shall carefully and closely chronicle the progress of art and science, at home and abroad. All we ask in return is that cordial fellowship and hearty support may be extended to us, by all our old friends and thousands of new

ones. Solliciting the assistance of such of our readers, in extending among their acquaintances a knowledge of the benefits which may be derived from the information contained in the *SCIENTIFIC AMERICAN*, we assure them that our aim shall ever be to—

"Flare up in truth, truth to the searching truth, because it is true, and good to everything."

Details of the Atlantic Telegraph.

The *Harvard* (C. W.) Times contains a long article headed "The Originator of the Atlantic Telegraph as Englishman," in which it gives a detailed account of the efforts of a young Englishman named F. H. Gibbons, toward bringing the subject of a transatlantic telegraph before the capitalists of Canada and Nova Scotia, and claims that the great conception of the work now happily completed originated with Mr. G. in 1850 or '51. We beg leave to inform our Canadian neighbors that we have a prior claim to originality in this matter, on behalf of our own countrymen, at least two years anterior date, and that the distinguished honor of originating and pointing out the feasibility of the great enterprise for whose completion the world is now ringing with praise, belongs exclusively to Gen. Hiram H. Hobbell, a distinguished member of the Phiadelphia bar, who projected and originated the grand idea as early as 1848, and up his associate, J. H. Sherrborne, who had the moral courage to join Gen. Hobbell in signing his memorial to Congress, detailing the plan, and asking governmental assistance in carrying it out.

This memorial is the origin of the Atlantic telegraph, and was presented to the Senate of the United States by the Vice President, Hon. G. M. Dallas, and to the House of Representatives by Hon. J. E. Ingersoll, on the 29th of January, 1849. When first published it was treated as a chimera of the wildest kind, and the memorialists, if not mad, as nearly so as possible. When presented in the Senate by Vice President Dallas, the greater part of that body were for throwing it under the table; but one Senator (says Mr. Dallas in a note to Gen. Hobbell, dated March 18, 1854), *J. J. Jones*, *French*, moved that it be referred to the Committee on Commerce, remarking that "the world was not yet prepared for the project, but might be soon." This memorial is recorded on the Senate Journal of the day it was presented, and will speak for itself. The idea of establishing a transatlantic telegraph with Gen. Hobbell was not a vague and impracticable one, but was the result of long and patient study, investigation and inquiry of an original and practical mind, which, while it thoroughly comprehended the gigantic character of the undertaking, was yet alive to, and singularly suggestive of the obstacles to be encountered, and the means of overcoming them. In the memorial, the existence of the plateau or table land between Newfoundland and Ireland is first announced to the world as the reason where the telegraphic communication would be established between the Old and the New continents. The words of the memorial are explicit on this point, as will be seen by the following extract from it:—

"Your memorialists proceed to say, that from many observations that have been made, there is incontestible evidence of the existence of a submarine table land, extending from the Banks of Newfoundland across the Atlantic Ocean to a north of the British Channel. This is proved by the altered color of the sea water, which has a different appearance in unfathomable places from what it has in shallow spots. This, combined with the volcanic construction of Ireland and the Azores, and the situation of that portion of the ocean that lies between both these volcanic groups, has led to the conclusion that there has been a rising up of the bottom of the sea, through the agency of a Plutonic power, and that the bottom thus elevated appears to be out through in many places by deep water channels. The appearance of mud, pebbles, and other marine creatures seen upon the edge of the disclosed water strengthens this opinion."

They then proceed to ask that they be furnished with a vessel, in order to make the necessary surveys and soundings, and it was, no doubt, in accordance with this suggestion that Lieut. Berryman was dispatched, and did make his soundings over this part of the ocean in 1853. Lieut. Manly did not make a personal survey himself, but made a report upon the soundings of Lieut. Berryman, under date of 23d of February, 1854—five years after the Hobbell and Sherrborne memorial had been presented to Congress and promulgated to the world.

From the foregoing indisputed documentary evidence now on file at Washington, it is plain that the scheme for a transatlantic telegraph had its origin in America, and that the mode, means, and location to carry the telegraph wire or cable across the Atlantic ocean were originated by Gen. Hobbell; that to him and to his deceased associate Mr. Sherrborne, who signed the memorial, is due the exclusive honor of first pointing out the existence of the plateau or table land between Newfoundland and Ireland, in connection with the telegraph cable now successfully laid upon it; and finally that these gentlemen were the first to publish and promulgate the feasibility of such an enterprise, and thus enlist in its behalf the attention, capital and skill of the individuals and governments, through whose agency the incentive idea of the great idea in which it originated has been successfully carried out in accordance with the original suggestions contained in the Hobbell and Sherrborne memorial.

The *Gutta Percha Life-Boat*. The great utility of a life-boat can be appreciated by very few persons who have not been upon the ocean, and seen the waters lashed with fury, beating against the sides of a gale-stripped ship. It is the last resource; the ship has been knocked to pieces on some rock or shore, or has been put in a sinking condition by the violence of the storm, and the passengers and crew forgetting their treasures and the cargo, think but of saving their lives. The life-boat is manned, the perishing people cling to her sides, and down goes the ship, leaving but that frail little boat between them and eternity. How important is it, then—not in a commercial sense, merely, but in the higher and grander sense of pure humanity—that this life-boat should be constructed in the best manner, and of the best materials—that it should be able to endure knocking about on rocks—that it should not leak, and if capsized, should be able to right itself immediately.

To produce a perfect one, money and genius; and in 1858 the Duke of Northumberland offered a reward of one hundred guineas for the best life-boat. Three hundred persons answered the call, and Mr. Beeching, of Yarmouth, England, obtained the prize, having produced what was then the very best. Since that time many inventors have tried to produce a better, but all their efforts have been directed in the old and well-trodden paths of improving the arrangement of air chambers, &c., and it was not until 1855 that a new material was proposed; this was gutta percha, which we think will do much for the saving of our fellow men from a watery grave. On the 17th we had an opportunity of witnessing a practical test of its qualities, and of its adaptability to this purpose, the results of which were satisfactory in the extreme.

The life-boat with which the experiments were made was 16 feet long, about 5 feet beam, and 3½ feet deep; she had an air chamber at each end, and was fitted inside with wooden staves, thwart, &c. When in the water she will sustain 100 persons, and from what we saw, seems almost incapable of injury. There are no joints or seams in one of these boats, as they are cast or molded in a male and female mold by hydraulic pressure, from one piece of gutta percha, which is therefore compact and hard. The spot chosen for the trial was the beach at Long Beach, N. J., opposite the National Hotel, and as there was a southwest wind, the "rollers" as

surf, was pretty high. The surf-boat men took her and tried hard to capsize her, but could not succeed, and then filling her with water, sent her adrift among the rollers, which brought her safe and uninjured to shore. She was most drawn high and dry, and pummeled by the surf with an ease, but they were not able to make any impression on her sides. Altogether, the experiments clearly proved that gutta percha was an excellent material for a life-boat, and that it possesses many advantages not found in the substances usually employed. It is light, cheap, and easy of construction and repair, and when worn out or badly damaged, the material is always a marketable commodity. The painter, Mr. E. B. Larcher, of this city, received many well-deserved compliments from the persons who witnessed the trial, and we understand that a company is formed for the manufacture and sale of these boats.

Mineral Oil.

The *Mining Chronicle* mentions an improvement recently patented in England by E. Lee, of Sulist, by which a considerable saving of time and expense is effected, as three times or more of raw material may be operated on in one still. The invention consists in distilling or abstracting the oil contained in the coal, cased, schist, or other mineral substances, by combining such substances with asphaltum or pitch (the residuum formed in the manufacture of gas for illumination), and other suitable substances, and by the application of heat, which dissolves the asphaltum, and causes the mineral bituminous substances to give off their oil in the form of vapor. He breaks the bituminous substances and asphaltum into pieces of any convenient size, and puts the whole into a common still, which is then closed and heated in the usual manner. The vapor is condensed in an ordinary worm, and the residue may be used as fuel. Another important feature in the invention is, that the still may be heated so rapidly and to so great a degree, as possible without injury to the oil produced, or waste from the production of gas; moreover, the oil produced by the single distillation is almost clear, the carbonaceous and earthy particles of the mineral bituminous substances being retained in the still by the asphaltum or pitch, whereas in the modes heretofore adopted, the products from coal, cased, and schist have required a second distillation to separate the oil from the asphaltum or pitch, and to produce oil of a color and specific gravity equal to that produced by Mr. Lee's invention.

Patents.

T. B. Dodge, Esq., Chairman of the Patent Office Board of Appeals, has obtained two months leave of absence. He lately favored us with a call, when en route to his home in New Hampshire.

We understand that all the back appeal cases have been acted upon so that the docket is clear. Appeals are now heard and decided within a brief time after presentation. This is a very gratifying state of things for applicants, and indicates the closest industry on the part of the Board, for at times their business has been much crowded.

The Board of Appeals has been in operation now nearly a year, and we believe its workings have given pretty general satisfaction. It has served to harmonize the decisions of the Office, and inspire a confidence and respect for the institution which it did not before enjoy.

At the time of the creation of the Board, we expressed the opinion that it was a movement which the times demanded, and that it would reflect high credit upon the sagacity of the Commissioner of Patents. Nearly a year's practical experience of the workings of the Board fully confirms the impression originally formed.

During the absence of Mr. Dodge, the appeals will be attended to by the other members of the Board, Messrs. Lawrence and Little, both of whom are able men.

Starch Manufacture.

The great consumption of this article—in which every civilized country indulges, as enabling the community to keep that status which is next to gold—has rendered it necessary, from time to time, to improve its manufacture in many ways. A large factory for the production of starch was some time ago started at the pleasant village of Glen Cove, on Long Island Sound, and after it had been in operation about a year, it was destroyed by fire on the 27th of February last. As it was largely insured, means were quickly provided to erect a new one, and a few weeks ago, the Glen Cove Starch Manufacturing Company, through their energetic secretary, Wm. Dwyer, who has been the persevering genius of the whole, invited some eight hundred persons to spend an afternoon in the works, to inaugurate their re-commencement. Every visitor who knew anything of starch manufacture was enabled to see at a glance the many improvements there introduced, not so much in the processes themselves, as in a careful attention to the detail, and in every possible instance the substitution of machinery for manual labor, as, for example, it has been the custom to elevate the starch water from floor to floor and into vats, by hand, but at this factory a great number of Cary's rotary pumps are employed, and they were a great amount of labor. The water is also of the best quality, issuing from a spring, and passing through the natural rocky filter of old mother Earth. The factory is capable of turning out eighteen tons a day, which is nearly two hundred thousand pounds a year more than Great Britain produced in 1854.

Starch is a beautifully white pectose substance existing in all grains, fruits, roots and cereal roots, and is a necessary component of animal nutrition. Rice contains 85 per cent; Indian corn, 45; potatoes, 20; and other vegetables various proportions. In Europe much is made from rice, but here the best white corn is used. The corn when delivered at the factory is heated from the steep to the top of the building, and after having been winnowed, it is soaked in water to prepare it for the mills, to which it is carried through shoots by a stream of water, and the mixed meal and water passes from the mills into the vats where the two principal constituents of the corn, starch and gluten are separated. This is done by kneading and straining the corn, and the starch flows away in a white milky liquid, the gluten remaining behind. The starch is then allowed to settle, and when tolerably solid is placed on shelves of loose brick which absorb the moisture, some of which, however, evaporates. Kneading falsifies the process, when it is ready to be packed in paper for sale.

The Glen Cove Starch Company, determined to lose nothing, sell the gluten for food for horses, cattle and pigs, to which purpose it is excellently adapted, being far better, and we should think as cheap as veal. They also make an article of food, in the form of a cake, which we tasted, and have no hesitation in pronouncing it superb; it is called Malina, and the following recipe will inform our lady readers how it is to be made:—

Malina.....Half Pound.
Sugar.....Two Cups.
Butter.....Half Cup.
Eggs.....Three.
Green Tartar.....Teaspoonful.
Soda.....Teaspoonful.

Dissolved in one-third of a tea cup of milk. Mix thoroughly, place in patty-pans, and bake immediately in a quick oven, from ten to fifteen minutes. The cake improves by age, if kept in a dry place.

The fine engraving apparatus of the factory and the machinery are perfect, and the excellent condition in which both are kept, called forth the warmest praise from the visitors, who, after partaking of some substantial hospitality in the way of a collation, returned highly pleased with what they had seen, and all agreeing that the Glen Cove Starch Manufacturing Company was deserving of an excellent success.

Atlantic Telegraph Shares and Vested Rights.

Immediately upon the receipt of the intelligence at London of the successful laying of the Atlantic telegraph cable, the shares of \$5,000 each, which were freely offered the day before for \$1,700, advanced at once to \$4,600. The original paid-up capital of the Company was \$1,000,000, and this has been increased to \$5,280,000. Of this sum \$575,000 in shares is to be handed over to the company in payment for the exclusive privilege assigned to it upon completion of the undertaking. The colonial associations of the company give them an exclusive right for fifty years as regards the Newfoundland coast and the shores of Labrador and Prince Edward Island, and twenty-five years as regards Breton Island. They have also a similar privilege for twenty-five years from the State of Maine.

From the respective governments of Great Britain and the United States the terms obtained are a payment of \$50,000 per annum from each for the transmission of their messages for fifty years, until the dividends amount to six per cent on the original capital, after which each government is to pay \$50,000 a year, such payment to be dependent on the efficient working of the line.

The First News Message through the Cable.

The following was received in New York on the morning of the 26th ult., and being the first news message transmitted through the Atlantic Telegraph Cable, deserves to be placed on record:—

VALENTIA, August 25, 1858.

Later and highly important intelligence has been received from China.

Later Indian news is to hand, the date from Bombay being to the 19th of July. The accounts represent that the mutiny was being rapidly quelled.

To-day's London papers have a long and interesting report by Mr. Bright, the Atlantic Telegraph Company's Engineer.

A treaty of peace has been concluded with China, by which England and France obtain all their demands, including the establishment of embassies at Peking and indemnities for the expenses of the war.

The royal mail steamship *Adela*, with the mails for Halifax and Boston, is to be despatched from Liverpool on Saturday next.

The screw steamship *North American*, with the Canadian mails, was to leave Liverpool to-day, for Quebec and Montreal.

The U. S. mail steamship *Pallas*, for New York, was to be despatched from Southampton to-day. We have it on reliable authority that the above message was only two hours in crossing across the Atlantic Ocean.

New Photograph Invention.

Messrs. Reedy & Garbano, photographic chemists, of this city, have recently perfected an apparatus by which life-size photographs may be produced with all the ease and perfection of small pictures. We have examined the mammoth portraits produced by it, and found them quite free from the distortion which has generally characterized large photographs; in fact, the life-size likeness is an exact counterpart in figure and detail of the person, and needs no title of the artist's retouching as the autotype or daguerotype. The cost of materials used in the preparation of the paper is trifling, while the apparatus complete is manufactured for about \$70.

The instruments hitherto employed for making portraits of a larger size than 6 by 8 inches are sold at prices ranging from \$200 to \$1,000, and the chemical preparations required for a commencement involve a large outlay. The old methods, moreover, are uncertain, tedious, and the best results unsatisfactory, till the pencil of the artist has subdued down the defects.

The inventors are preparing for exhibition a full length colored photograph, fifteen feet in height, of one of our most distinguished citizens.

This new instrument, called the "Mega-

scopic Camera," is similar in principle to the solar microscope. A small picture is first produced in the usual way from the object; an image of this small picture is thrown magnified from the new camera on to a sensitive surface (paper or canvas), on which it is impressed in a few seconds. Any small picture (portrait or view) may thus be accurately enlarged to any desired extent.

Many of our most enterprising photographers have adopted the instrument, and seem to think that it will come into general use for all pictures over 6 by 8.

Steam as applied to Navigation and Land Travel.

Several nations claim the credit of having first conceived the idea of employing steam for moving carriages on land as well as ships at sea, but the author of the lately published life of George Stephenson seems to think that the weight of evidence is on the side of a Frenchman named Soliman de Cass, who was shot up for his supposed madness in the Bateau de Paris. Marquis de Lamoignon, in a letter to the Marquis de Cinq-Mars, dated Paris, February, 1641, thus describes a visit paid to this celebrated madhouse in company with the English Marquis of Worcester:—"We were crossing the canal, and I, more dead than alive with fright, kept close in my companion's side, when a frightful face appeared behind some immense bars, and a hoarse voice exclaimed, 'I am not mad! I am not mad! I have made a discovery that would enrich the country that adopted it!' 'What has he discovered?' asked our guide. 'Oh!' answered the keeper, shuddering his shoulders, 'something trifling enough; you would never guess it! it is the use of the steam of boiling water!' I began to laugh. 'This man,' continued the keeper, 'is Soliman de Cass; he came from Normandy four years ago, to present to the King a statement of the wonderful effects that might be produced from his invention. To listen to him, you would imagine that with steam you could navigate ships, move carriages; in fact, there is no end to the miracles which he insists upon it, could be performed. The Cardinal sent the madman away without listening to him. Soliman de Cass, far from being discouraged, followed the Cardinal wherever he went, with the most determined perseverance, who, tired of finding him forever in his path, and annoyed at his folly, shut him up in the Bicêtre. He has even written a book about it, which I have here.'"

It appears that the Marquis of Worcester was greatly struck by the appearance of De Cass, and afterwards studied his book, portions of which he embodied in his "Century of Inventions."

DANGER OF HOOP SKIRTS.

We are glad that the medical attendant of the Princess of Gethland asserts that hoop skirts are the cause of accouchments lately becoming so dangerous and difficult. He adds that this fashion is the source of a vast number of chills, the consequences of which are, in many cases, mortal. If this gentleman is to be credited, the prevailing method ladies adopt to spread themselves has as many deaths to answer for in Sweden as cholera. We have always thought that hoop skirts of reasonable breadth were not only an adornment to the persons of the fair wearers, but as sources of their ventilating character, actually beneficial to health. Ladies generally evidently think so, and as they are the actual sovereigns of fashion, and will wear what suits them, we doubt whether this statement will have any effect. One thing is certain, and none know it better than themselves, that no matter how fantastically or ridiculously they may dress, they will be admired the world over.

2,000 ounces of gold has been shipped from Nelson, New Zealand, to Melbourne, Australia, being the first shipment from the newly discovered gold fields of the former island.

Washington's Tomb and Household.

This place, which is to every American as hallowed ground, is about to be bought by the ladies of America, provided they get the money, to effect which object many of our most philanthropic "fair" have formed themselves into a society called the "Mount Vernon Ladies' Association." Their rooms are at the Cooper Institute, in this city; and any of our readers in their patriotic moments may send their donations to Miss M. M. Hamilton, who has undertaken the honorable post of Vice-president of this State.

New Disinfecting Compound.

There is a considerable difference between a deodorizer and a disinfectant. The former either merely removes or disguises a foul odor; the latter changes the character of the matter which creates the effluvia, and prevents it from sending forth disease. Fresh slacked lime and charcoal dust are very good deodorizers, but their disinfecting powers are not equal to some of the salts of manganese, which, when they combine with pestiferous fluids in sinks and drains, give out at the same time a considerable quantity of pure oxygen to refresh the atmosphere. The manganese of soda, or potash, has recently been tried in London with much success in deodorizing and disinfecting the water of the river Thames, and its use in our cities during dry weather may be of great benefit. It is applied by dissolving it in warm water, and pouring it into the sink or drain to be disinfected.

A Thrifty Machine Shop.

The Newark (Ohio) Machine Works commenced operations some four or five years ago, under the care of our esteemed friend, Mr. Joseph E. Mahan, and since that time the company has had a tide of continued prosperity. The amount of work turned out each year reaches about \$150,000. The men employed in the works, now numbering about one hundred, have distributed within the past three years, for purposes of pure benevolence, \$1,200. Forty-five of them are members of a reading room. They also take 222 papers, magazines, &c. In this list we recognize 30 copies of the SCIENTIFIC AMERICAN. These facts are interesting, and reflect much credit upon the mechanics as well as upon the managers of the company.

Our friend, H. S. Babbin, is still connected with the above works, and will continue to forward all subscriptions to the SCIENTIFIC AMERICAN entrusted to his care.

A Rule worth Observing.

In accordance with an inviolable rule adopted at the beginning of this journal, all subscriptions are promptly discontinued when the time for which they are paid expires. As a general thing, this system has the approbation of all our readers; but occasionally, we receive complaints, stating that we ought not to have enforced this rule in certain cases. Now it must be borne in mind that we cannot justly make any distinction between one subscriber and another; besides, we believe it would be impossible for us to manage our journal successfully under any other system than advance payment.

The local circulation of the SCIENTIFIC AMERICAN is comparatively small; its subscribers and patrons are scattered throughout all the States and territories of our country, and many copies are circulated in Europe; therefore it would be impracticable and useless for us to undertake to employ agents to travel and collect subscriptions. We hope all our friends will promptly remit, in order to secure their own subscriptions, and that they will get as many new subscribers as possible. We urgently appeal to them to come forward and aid in increasing our circulation, and thus not only confer a favor upon us which we shall highly appreciate, but spread abroad the useful information with which the columns of the SCIENTIFIC AMERICAN are always stored.

Clubs of twenty or more yearly subscriptions are supplied with the SCIENTIFIC AMERICAN at \$1.40 each.

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